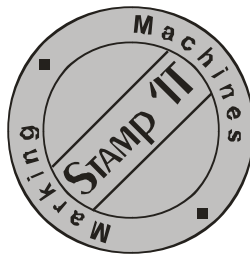
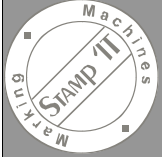




Metal Marking with CO2 Lasers

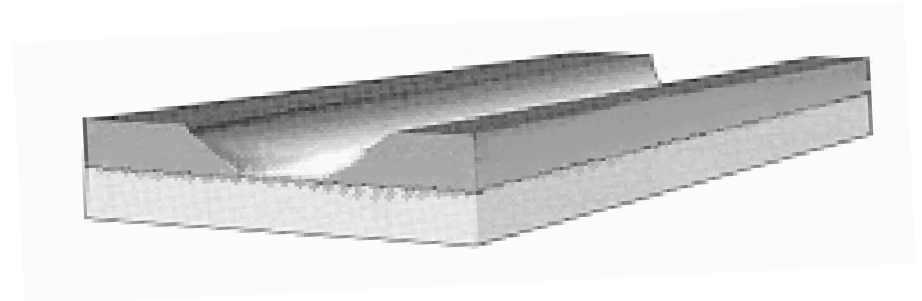
STAMPIT CNC Machines
(Swami Samarth Consultants)





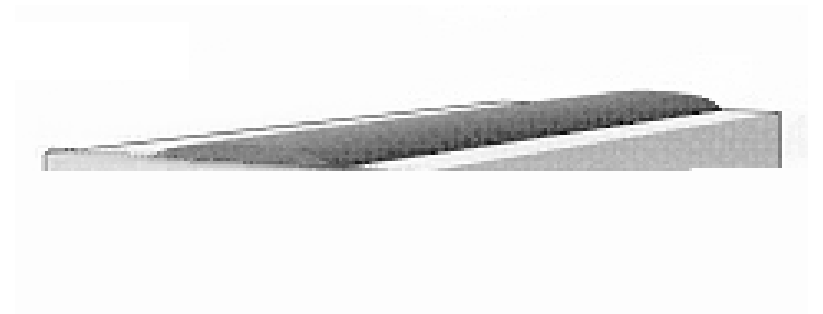
Major Types of Laser Marking

Ablation (deep engraving)

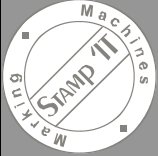


Coating removal
(anodized or Paint)

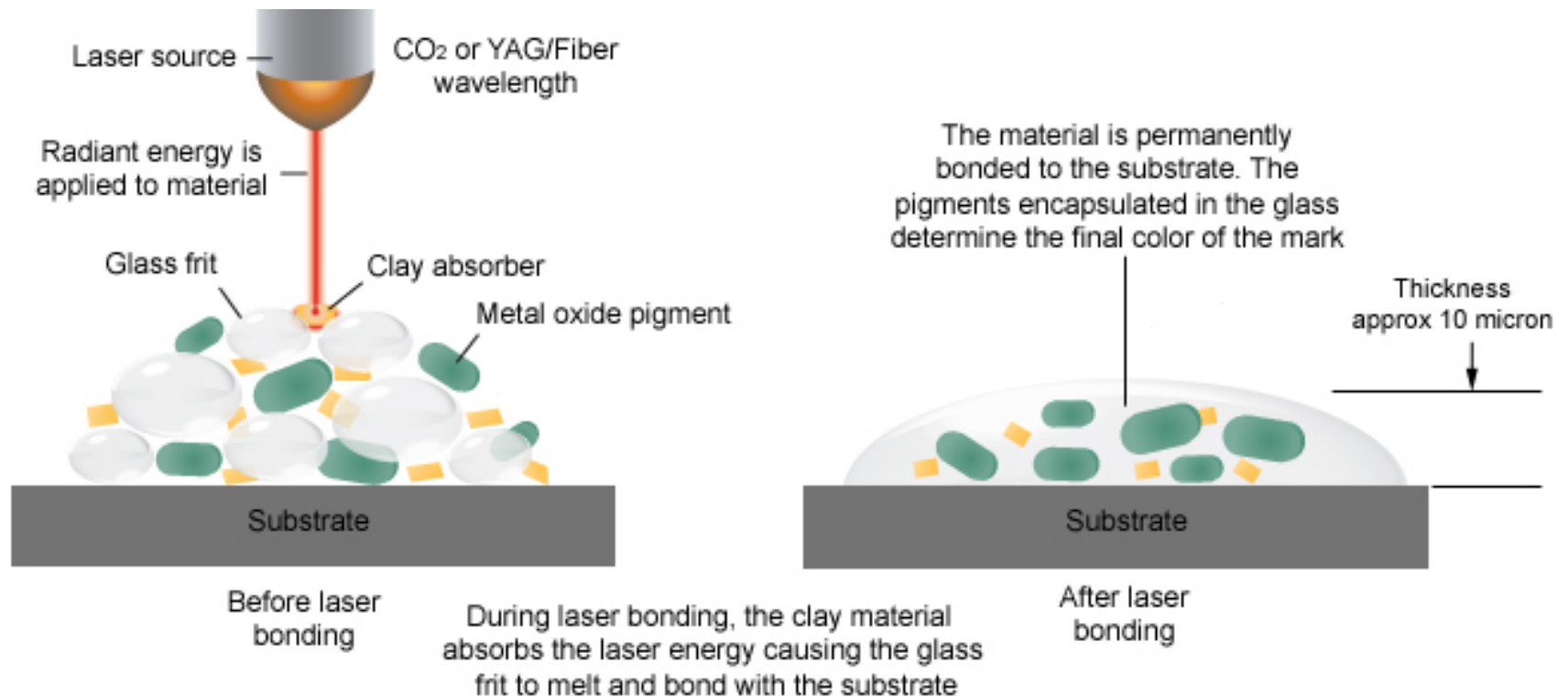
Annealing (carbon migration)



Laser bonding (TherMark)



TherMark Patented Process



1. Apply the proprietary laser marking material
2. A laser is used to draw a pattern, bonding the material to the surface
3. Remove excess marking material



TherMark Technology Benefits

- Permanent
 - Temperature, chemical, UV etc.
- High contrast
 - True black marks on metals
- High resolution
 - Line widths as small as 0.003"
- Color (glass & ceramics)
- Preserves substrate integrity
 - Additive process
- Increase ROI on laser systems
 - Especially on CO₂ lasers
 - Broadens marking capability of solid state lasers



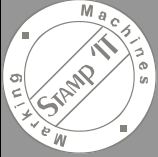
Laser Bonding Process Approvals

- Department of Defense, standard practice identification marking of U.S. military property
 - MIL-STD-130N
- NASA approved laser marking process
 - NASA-STD-6002A
 - NASA-HDBK-6003A
- Rolls Royce marking standard
 - JES 131
- Automotive Industry Action Group (AIAG)
 - B-17 2D Parts marking guideline



Why TherMark?





Why use TherMark versus other Alternatives?

- Usually a combination of factors
 - Difficult to mark substrates
 - Requirement for permanence
 - Harsh environment (high temperature, chemicals, moisture etc)
 - When high contrast & resolution are needed for machine readability
 - Aversion to material changes or substrate damage



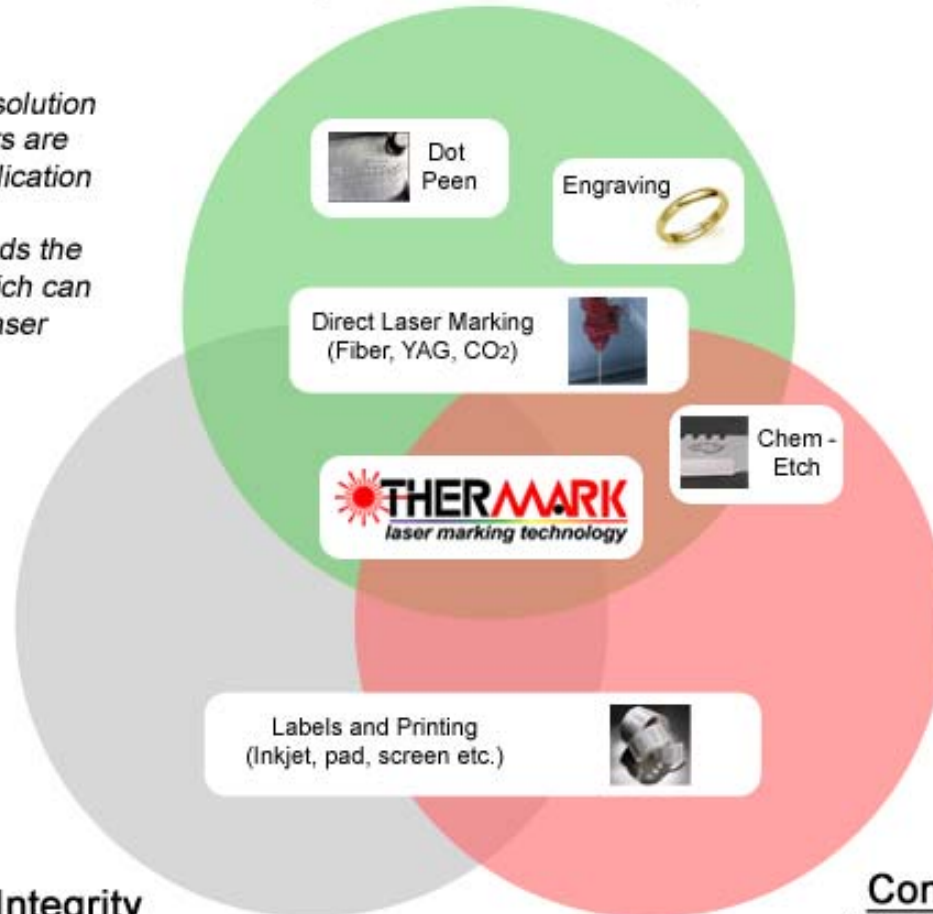
TherMark 'Sweet Spot'

Permanence

(Resistance to chemicals, temperature, UV, abrasion etc.)

TherMark is the ideal solution when all three factors are important in your application

TherMark also expands the range of materials which can be marked with a laser

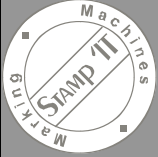


Markability & Integrity

(Can the substrate be marked, is it damaged during the marking process?)

Contrast & Resolution

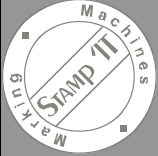
(Machine code readability, mark quality for branding and designs etc.)



TherMark Versus Direct Laser Marking

TherMark is a complementary product...

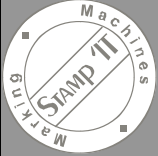
- Facilitates the use of lasers on materials that previously could not be marked; “get more from your laser”.
 - Aluminum, gold, silver, chrome etc.
 - Particularly relevant for lower powered inexpensive CO2 lasers
- Does not damage or change substrate
 - Important for plated surfaces and other sensitive applications
 - Facilitates marking on high-grade stainless steels without inducing areas susceptible to corrosion
- Wider “process window”
 - Process is less sensitive to material and laser variability
- Can deliver darker, high-contrast marks in a shorter time
 - But requires materials, application & cleaning



Examples of Contributing Factors

- Application:
Optical projection components
- Why TherMark?
 - Ability to mark readable barcode on silver plated ceramic that can withstand 535°C (1000°F)
 - Substrate / Temperature
 - The only viable solution





Examples of Contributing Factors

- Application:
Military battery cases
- Why TherMark?
 - Ability to make chemically resistant permanent black mark on white nylon case
 - Substrate / Permanence
 - The only viable solution

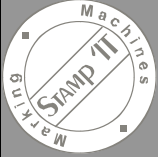




Industries Served

- Aerospace
- Automotive
- Medical devices
- Instrumentation
- Tools and machinery
- Sanitary ware
- Design and décor
- Awards and recognition





Typical Applications

- Unique identification (UID), 2-D matrix, bar code
- Traceability
- Serialization
- Authentication
- Security ID
- Logos
- Custom design
- Decoration
- Personalization





Kitchen Appliances



Brand marks &
safety warnings on
stainless steel



Value Proposition:

Improved contrast, better resistance
to UV and chemicals. No substrate
damage



Automotive



2-D matrix on
aluminum
transmission
cooling system



Logos & marks on
aftermarket parts

Value Proposition:

Improved contrast, hard to mark
materials (Al & Chrome plating)



Manufacturing & Industrial



LMM-14 on stainless steel tube connector



Black marks on a variety of substrates including glass and plastics



Medical Devices

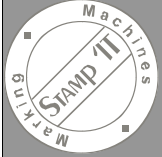
LMM-14 on surgical
stainless steel

Marks survive multiple
autoclave cleaning
cycles without corrosion



Value Proposition:

Permanence on hard to mark surfaces with no
substrate damage. Wider process window for marking.
Marks survive multiple autoclave cleaning cycles



Military and Aerospace



Marks survived extended trials in space with NASA

Value Proposition:

Permanence on hard to mark surfaces with no substrate damage. UV & temperature resistance



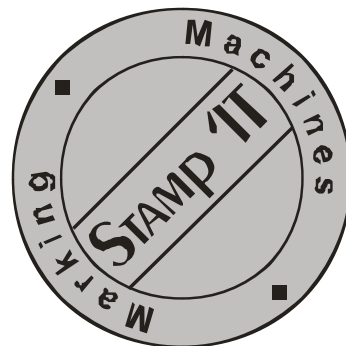
US Army Depot Test – UID Tags



Mark survived shot-peen and heat treat test.
The metal bent, yet the mark was still readable.

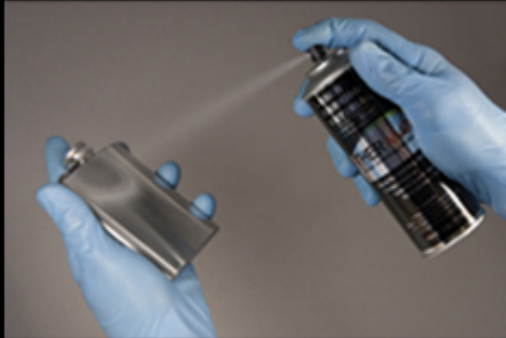


Using TherMark

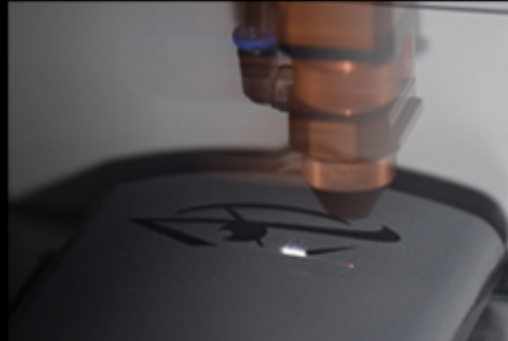




Application - Quick and Easy



Spray Thin Coat & Let Dry

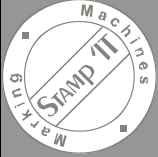


Bond with a CO₂ Laser



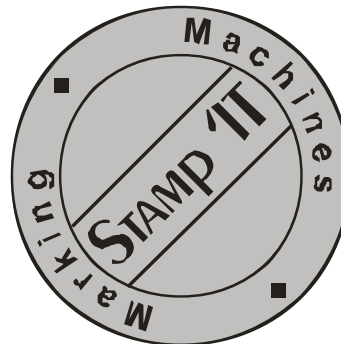
Wash to Reveal Mark

- Self adhesive tapes deliver a dry processing alternative
- High Speed tapes and print formulations are ideal for industrial process integration



India Sales

- Web site www.stampitcnc.co.in
- Office and Works:
 - Swami Samarth Consultants
 - 27/10 Indian Corporation Complex, Village Dapode, Bhiwandi, Thane. 421302
- Contact Details:
 - Mr. Kaushik Kale : 09923593192





Some Industrial Customers...

